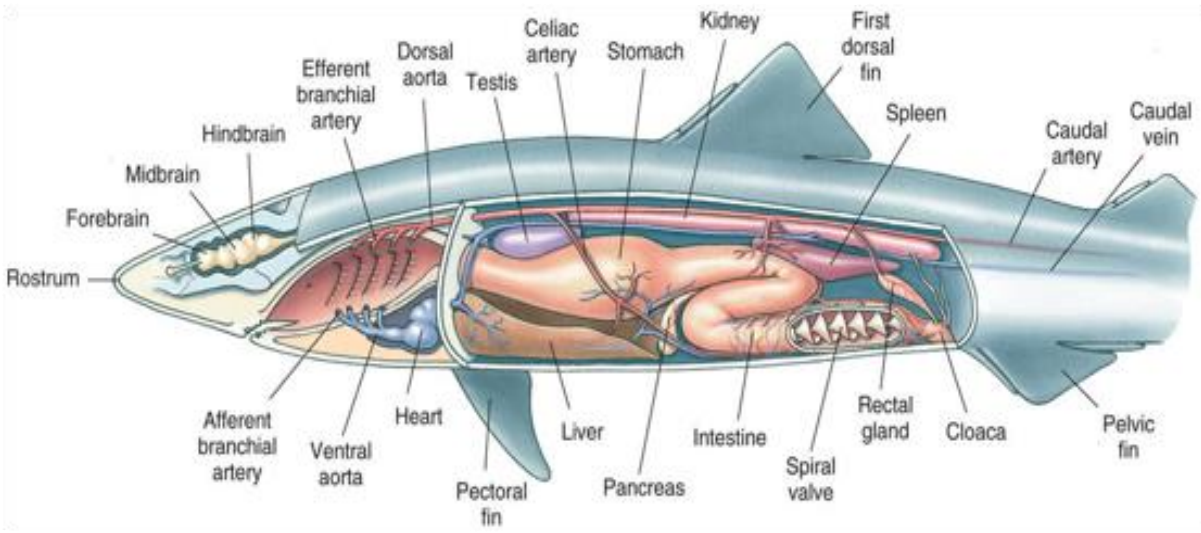
The digestive system

The digestive tract is begins at the mouth behind which is the oral Cavity, and ends either at a cloaca or anus. In mouth on the jaws there are many sharp teeth which are similar in shape. Sharks have many rows of sharp teeth and its shape depends on the shark's diet. The teeth are actually modified placoid scales, and are replaced regularly.

On the floor of the mouth is the immovable tongue, Posterior to the mouth is the pharynx, which connect the oral cavity to the esophagus, the posterior end of the pharynx is the esophagus, a short tube lined by many papillae. The esophagus leads into the "J"-shaped stomach. The upper portion, the cardiac region, lining with numerous glands which produce acids and enzymes that digest food. The shark does not chew its food, but swallows large pieces, which may remain in the stomach for some time. The caudal section of the stomach is the pyloric region that breaks the food down further. This ends in a muscular (وظيفة pyloric valve,) which regulates the passage of food into the intestine.

The small intestine is beginning at the pyloric valve. The first portion of the intestine is the short duodenum.



The larger and longer portion is the ileum. Opening the ileum reveals the (وظيفته وتعريفه spiral valve,) a unique adaptation of sharks that greatly increases the surface area available for absorption of nutrients. The large intestine or colon is very short; the (rectal gland وظيفته وتعريفه) is a slender, blind-ended, finger-like structure with duct into the colon. It excretes salt (NaCI) in high concentrations; to regulate the shark's salt balance. Colon connects with the short rectum, which leads to the cloaca. The cloaca is the common chamber for the digestive, excretory, and reproductive systems. The cloacal opening is the common opening for these systems.

Glandular organs in digestive system عددها فقط

1- The liver

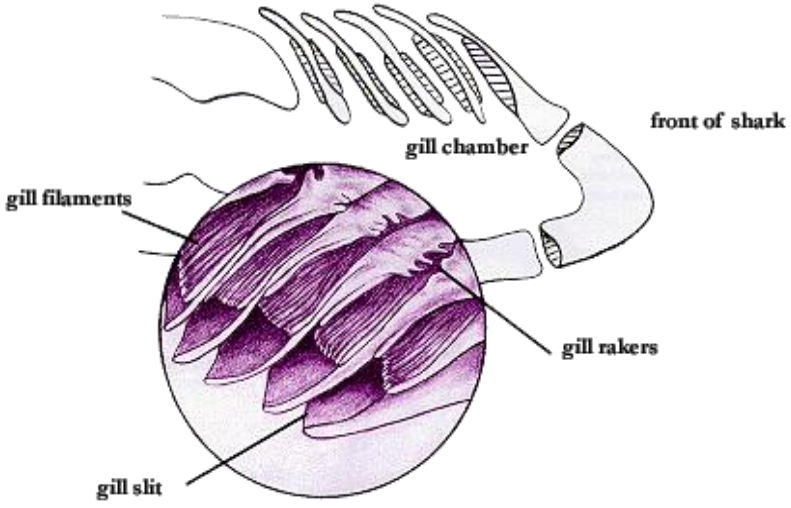
Is the largest organ in the abdominal cavity, it is composed of three lobes. The right and left lobes are large; the medial lobe is much smaller. The gall bladder is located within the smaller lobe. Gall bladder is small sac stores bile and releases it into the small intestine through the common bile duct.

1- The pancreas

The pancreas has two lobes located on the duodenum and the lower stomach. The secretions of the pancreas enter the duodenum by way of the pancreatic duct.

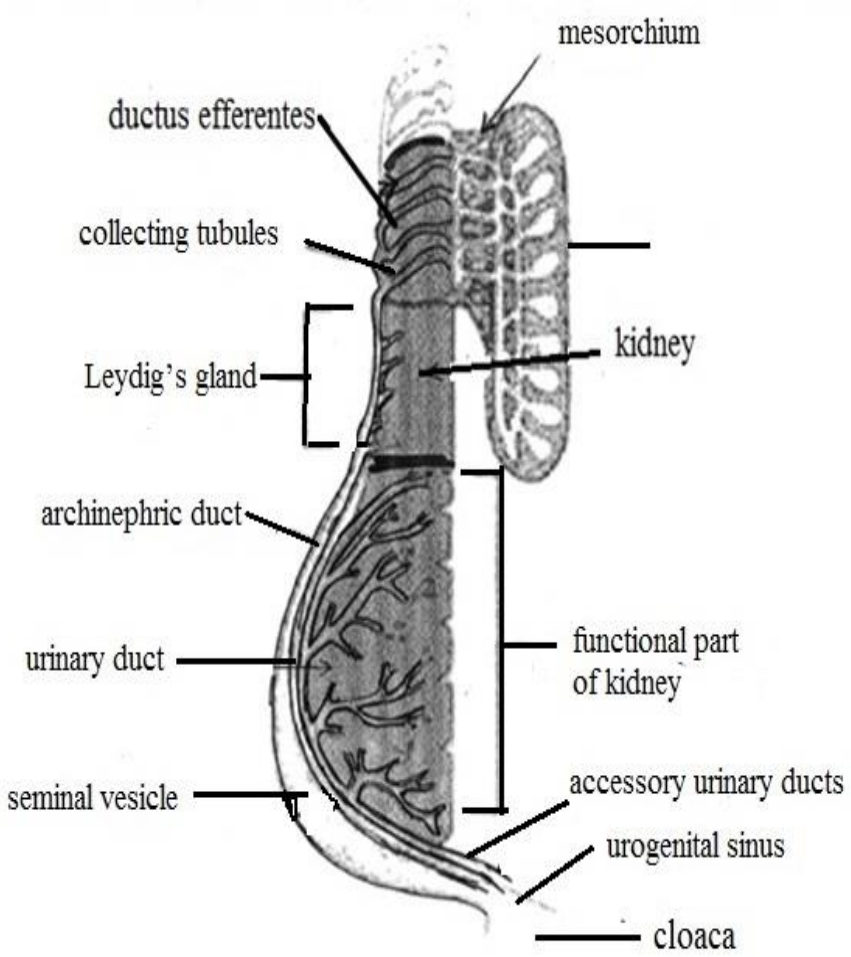
Respiratory system

Sharks have 5-7 pairs of gill slits located on the sides of their heads. There is also a modified slit, called the spiracle, which lies immediately behind the eye on the shark's head. Unlike bony fish, they do not have gill covers, water must continually flow across these slits in order for the shark to breathe. . Each gill is supported by a gill arch and protected by gill rakers, which filter the respiratory water and direct food toward the esophagus. Each gill arch supports one set of paired gill filaments, which help increase their surface area for oxygen exchange. Water enters through the mouth and the spiracle, into the pharynx, over the gills and exits through the gill slits. Respiratory gas exchange takes place on the surface of the gill filaments as the water passes over and out the gills.



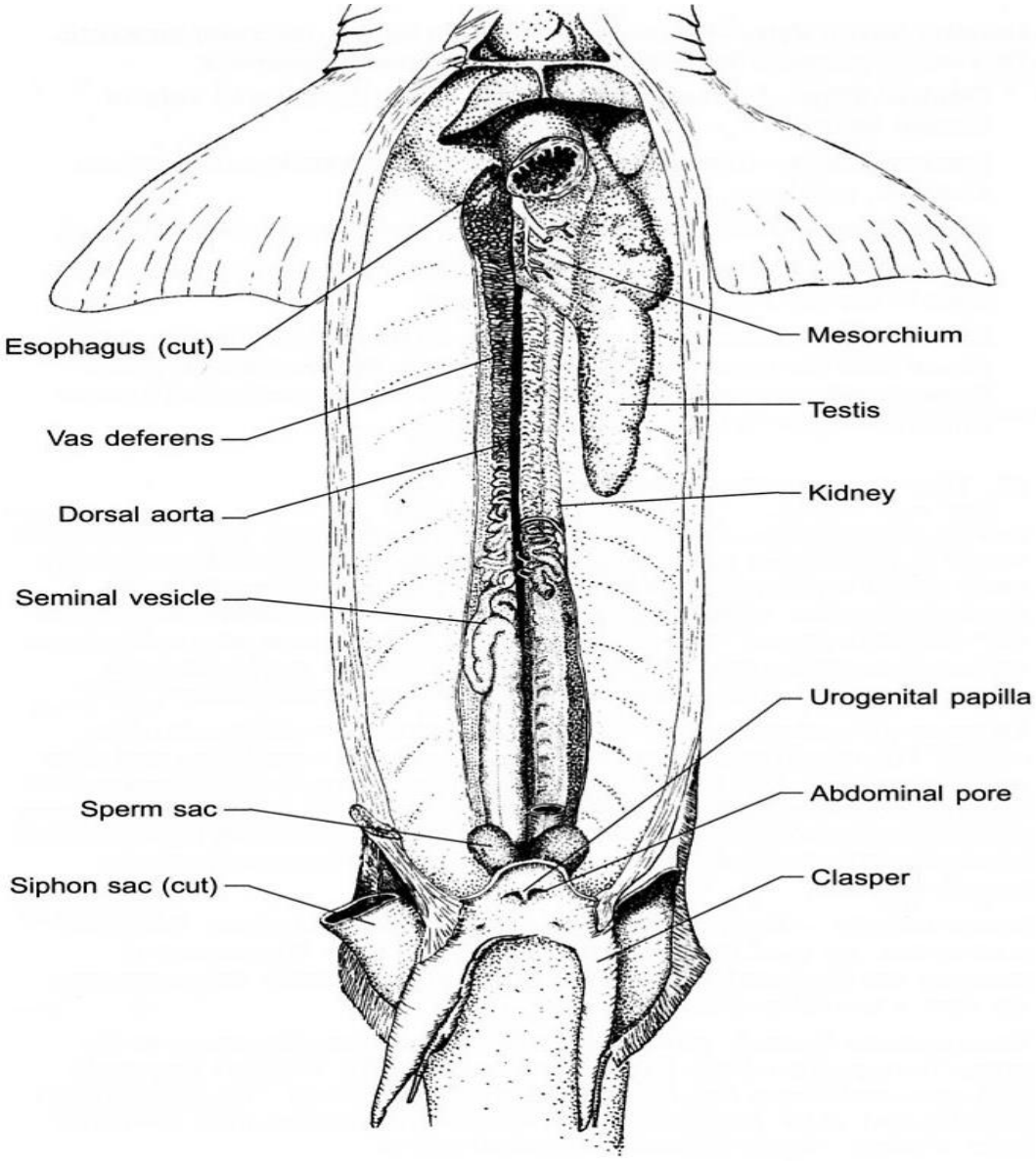
Urogenital system

The kidneys are flattened, ribbon-like, darkly colored structures lying dorsally on either side of the midline. Small collecting tubules from the kidneys collect and transport urine from the kidneys lead into the accessory urinary ducts along their lengths then open into cloaca. The kidneys of the male are the same as those of the female, the posterior portion is involved in the manufacture and transport of urine, the main difference lies in the anterior portion of the kidney, which in females is degenerate and functionless, but in males is an active part of the reproductive system.



urogenital system in male shark

The male testes are suspended in the cavity by the mesorchium. In the mesorchium, several small tubules called the ductus efferentes carry the sperms from the testes to the archinephric duct. The archinephric duct is a highly coiled tube that carries sperm to the seminal vesicle. The Leydig's gland, secretes fluid into the archinephric duct to protect the sperm. The posterior portion of the archinephric duct enlarges and forms the seminal vesicle, the posterior ends of the seminal vesicles transform to sperm sac. The joining of sperm sac end and the accessory urinary duct produce the urogenital sinus which open into cloaca. The male also have external structures called claspers. The claspers are rod like copulatory organs present on the inner borders of the pelvic fins. Each clasper has a groove on its dorsal side. The groove is opened at both the ends. The male deposits his sperm into the female's cloaca via claspers' grooves.

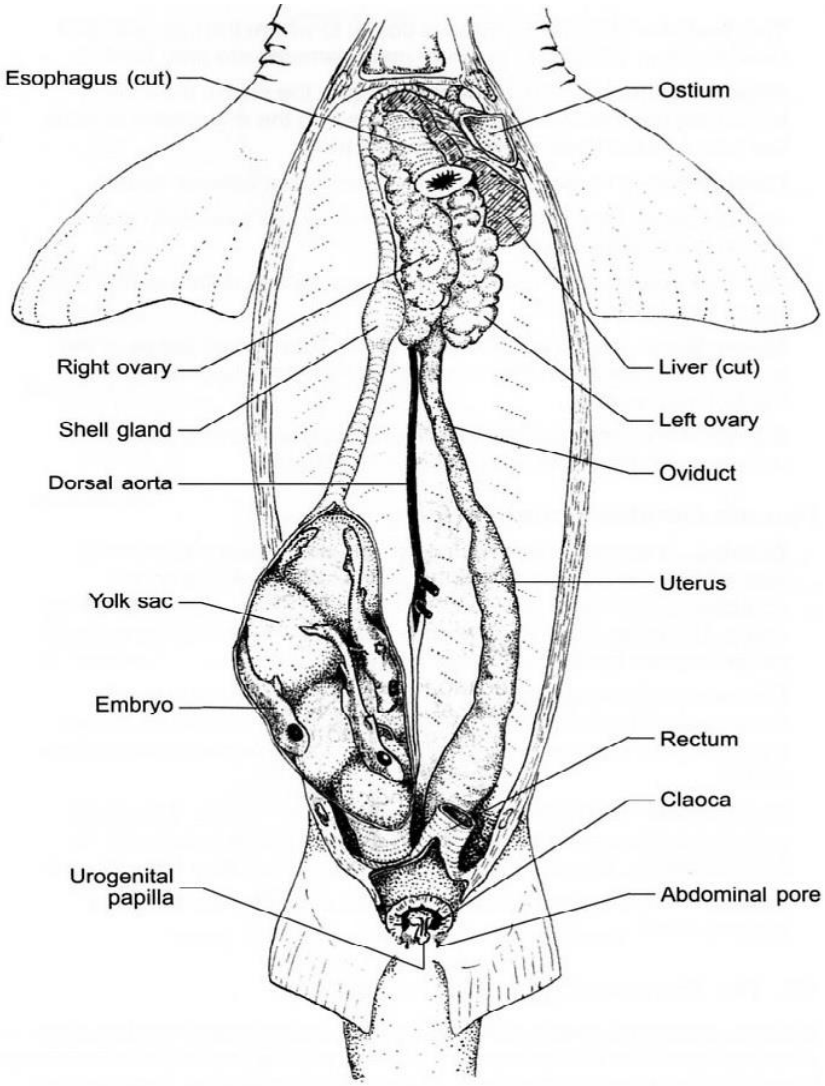


The female ovaries are suspended by a mesovarium, which contains eggs in different stages of maturity. Once the eggs reach maturity, they are released from the ovary and mesovarium and travel to the oviducts. Oviduct is elongated tubes that lay dorsal and lateral along the body cavity .At the beginning of oviduct there is shell duct. This gland secretes a thin shell around a group of eggs and is a reservoir

for sperm storage. Eggs are fertilized in this gland as they pass through.at the end of ovidut the uterus.

Uterus is enlarged caudal end of the oviduct; it is here that eggs develop. The two oviducts join in the dorsal portion of the cloaca.

Fertilization is internal, usually taking place within the shell gland of the oviduct. The fertilized eggs continue to move posteriorly to the uterus.



Lab 5